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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,369	02/13/2004	Robert J. Hariri	9516-141-999	2020

20583 7590 03/29/2005

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EXAMINER	
BARNHART, LORA ELIZABETH	
ART UNIT	**PAPER NUMBER**
1651	

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/779,369	HARIRI, ROBERT J.	
	Examiner	Art Unit	
	Lora E Barnhart	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/26/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 2 is objected to because of the following informalities: It depends from itself. Appropriate correction is required. In the interest of expediting prosecution, claim 2 is assumed to depend from claim 1 for purposes of this Office action.

Claim 4 is objected to because of the following informalities: It contains the sentence fragment "cord blood stem cells." in line 3. Appropriate correction is required.

Claim 11 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 1 recites an administration step that delivers at least 5 billion total nucleated cells; claim 11 depends from claim 1 and recites the limitation that the administration delivers at least 5 billion total nucleated cells. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 and 11-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is confusing in that it recites "a method of treating a patient in need thereof" without particularly pointing out what exactly is needed by the patient, i.e., the

method, a treatment, the patient himself. Clarification is required. Because claims 2-9 and 11-28 depend from indefinite claim 1 and do not clarify the point of confusion, they must also be rejected under 35 U.S.C. 112, second paragraph.

Claim 17 recites the limitation "said disease, disorder or condition" in line 1. There is insufficient antecedent basis for this limitation in the claim. Claim 1 does not recite a disease, disorder, or condition. Similarly, claim 21 recites the limitation "said condition" in line 1. There is insufficient antecedent basis for this limitation in the claim. Claim 1 does not recite a condition. Clarification is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 20, 21, 25-28, 34-47, 50, 54, 57, 58, and 62-82 of copending, commonly-assigned Application No. 10/366,671. Although the conflicting claims are not identical, they are not patentably

distinct from each other because they are drawn to methods comprising administration steps that are not patentably distinct.

For example, claim 54 of the '671 application recites a method of treating a patient comprising administration of at least 5 billion nucleated cells to said patient, said cells comprising "embryonic-like stem cells". Instant claim 1 recites an identical method, but the cells are identified as "cord blood or cord blood-derived stem cells". The '671 application defines "embryonic-like stem cells" simply as stem cells that originate from a post-partum placenta (p. 5, lines 10-12), and none of the claims of the '671 application particularly point out what properties of the claimed "embryonic-like" stem cells distinguish them from the instantly claimed "cord blood-derived" stem cells. The placenta certainly comprises the umbilical cord, so claim 54 of the '671 application may be interpreted to refer to cord blood-derived stem cells.

Instant claim 1, in addition to being patentably indistinguishable from claim 54 of the '671 application, is also similar in scope to claims 20, 21, 25, and 50 of the '671 application. Instant claims 2 and 3 are similar to claims 57 and 58 of the '671 application. Instant claims 4 and 5 are similar to claims 26-28 of the '671 application. Instant claims 6-9 are similar to claims 34-36 and 62-65 of the '671 application. Instant claim 10 is similar to claim 47 of the '671 application. Instant claims 11-13 are similar to claims 54, 66, and 67 of the '671 application. Instant claims 14-28 are similar to claims 37-46 and 68-82 of the '671 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10 and 14-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Boyse et al. (1991, U.S. Patent 5,004,681; IDS of 1/26/05) taken in light of Sakabe et al. (1997, *Stem Cells* 15:73-81; IDS of 1/26/05) and Kondo et al. (1998, *Clin Exp Allergy* 28: 1340-1344; IDS of 1/26/05). The claims are drawn to a method of treating a patient comprising administering a composition comprising cord blood or cord blood-derived stem cells, wherein said administration delivers at least 5 billion nucleated cells. In some dependent claims, the stem cells express specific markers. In some dependent claims, the cells are treated with a growth factor, in some cases a specific growth factor. In some dependent claims, the patient has a specific disease or disorder. Some claims are drawn to a treatment of myelodysplasia comprising administering cord blood or cord blood-derived stem cells to a patient in need thereof. In some dependent claims, the cells are preconditioned for a specific length of time prior to administration.

U.S. '681 teaches that blood taken from healthy neonatal and fetal mice and comprising stem cells reconstitutes the hematopoietic system of adult mice that have

been irradiated with a level of radiation that would be lethal without the infusion of stem cells (Examples 6.11; column 53, line 33 through column 56, line 62). In the examples of U.S. '681, the donor and recipient mice are selected such that there is no histocompatibility problems and, therefore, no need for HLA typing (column 54, lines 5-7). Sakabe et al. is cited as evidence that blood stem cells comprise CD34+ CD38+ cells and CD34+ CD38- cells (Abstract; p. 77, column 2, paragraphs 1 and 4; p. 78, column 2, paragraph 1; Table 2). Kondo et al. is cited as evidence that blood, including cord blood, comprises numerous growth factors, including IFN-γ (p. 1341).

While U.S. '681 does not teach treating myelodysplasia or treating patients with the specific conditions recited in claims 14-23, they do perform the same administration of cord blood cells as in the present application (Examples 2 and 3).

Because the method step of U.S. '681 (i.e. administration of cord blood) is the same as the instantly claimed step, U.S. '681 inherently teaches the same process of treatment of myelodysplasia and treatment of patients diagnosed with various disorders as in the current application. U.S. '681 therefore anticipates the treatments as instantly claimed.

Similarly, the "preconditioning" step of claims 26-28 is broad and does not comprise any specific method steps, so said step encompasses conditioning the cells by allowing them to grow in their natural environment, i.e. within the fetus or neonate.

Claims 8 and 9 recite intended uses for the step of treatment with a growth factor, both of which are inherently achieved by treating the cells with the growth factor. M.P.E.P. § 2112 (I.) recites, "The claiming of a new use, new function or unknown

property which is inherently present in the prior art does not necessarily make the claim patentable." The mere recitation of an outcome due to the treatment with growth factors does not make the matter of claims 8 and 9 novel.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. '681 (IDS) taken in light of Sakabe et al. (IDS), Kondo et al. (1998, *Clin Exp Allergy* 28: 1340-1344; IDS of 1/26/05), Gluckman et al. (1998, *Hematology* p. 1-14; IDS of 1/26/05), and Gluckman et al. (2001, *Transfus. Clin. Biol.* 8: 146-154; IDS of 1/26/05). The claims are drawn to methods of treatment as described above. In some dependent claims, at least 10 billion or 20 billion nucleated cells are delivered. In some dependent claims, the cells are not HLA-typed prior to administration.

As described above, U.S. '681 teaches the hematopoietic reconstitution of irradiated mice with blood from fetal and neonatal mice (Examples 6.11, *inter alia*). Sakabe et al. is cited as evidence that blood stem cells comprise CD34+ CD38+ cells and CD34+ CD38- cells (Table 2, for example), and Kondo et al. is cited as evidence that blood comprises growth factors (p. 1341, column 2, paragraph 2).

U.S. '681 does not teach administration of over 5 billion nucleated cells. U.S. '681 does not address the need for HLA typing when the cord blood is not from autogenous sources, nor does it discuss any type of preconditioning before implantation of the donor cells.

Gluckman et al. (1999) teach that a high number of transplanted nucleated cells is a good prognostic factor for a successful procedure (p. 9, column 2 through p. 10, column 2). Gluckman et al. (2001) teach that graft-versus-host disease (GVHD) in unrelated cord blood transfusions is usually neither severe nor chronic, indicating that HLA matching may not be necessary for cord blood transfusions (p. 153, columns 1 and 2).

A person of ordinary skill in the art would have had a reasonable expectation of success in administering a composition comprising cord blood or cord blood-derived stem cells as in U.S. '681 without performing HLA typing because Gluckman et al. (2001) teach that said typing is not a major factor for selecting a cord blood donor (p. 153, column 2, paragraph 2). The skilled artisan would have been motivated to transplant blood without performing HLA typing first for the expected benefit that cord blood from any donor could be transfused to any needy recipient without threat of

severe, chronic GVHD. Said artisan would be further motivated to use cord blood cells that are not a perfect HLA type match for the expected benefit of increasing the number of available cells per transfusion by pooling together cord blood from several donors.

The selection of the number of nucleated cells transfused clearly would have been a routine matter of optimization on the part of the artisan of ordinary skill, said artisan recognizing that the chances of success in transfusion is directly related to the number of stem cells administered (Gluckman et al. (2001), p. 9 and 10). The skilled artisan would be motivated to attempt a transfusion with as many cells as possible. A holding of obviousness over the cited claims is therefore clearly required.

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was made to perform the transfusions of U.S. '681 with as many cells as possible, from as many donors as are available, because Gluckman et al. (1999) teach that the success of transplantation is directly related to the number of stem cells infused into the recipient, and because Gluckman et al. (2001) teach that HLA typing is not necessary for avoiding GVHD in cord blood recipients.

Therefore, the invention as a whole would have been *prima facie* obvious to a person of ordinary skill at the time the invention was made.

No claims are allowed. No claims are free of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lora E Barnhart whose telephone number is 571-272-1928. The examiner can normally be reached on Monday-Friday, 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lora E Barnhart

LEB

SANDRA E. SAUCIER
PRIMARY EXAMINER